

A

PROBATIONARY
SURGICAL ESSAY,
ON THE
ANATOMY OF THE PARTS

CONCERNED IN THE
LATERAL OPERATION FOR THE STONE;

SUBMITTED,

BY AUTHORITY OF THE PRESIDENT AND HIS COUNCIL,

TO THE EXAMINATION OF THE

*ROYAL COLLEGE OF SURGEONS OF
EDINBURGH,*

WHEN CANDIDATE

FOR ADMISSION INTO THEIR CORPORATION, IN CONFORMITY TO THEIR REGULA-
TIONS RESPECTING THE ADMISSION OF ORDINARY MEMBERS,

By JOHN GAIRDNER, M. D.

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SURGICAL ESSAYS

OF THE

ANATOMY OF THE HUMAN

LATERAL OPERATION IN THE STOMACH

AND

OF THE HUMAN STOMACH

TO THE SURGEON

ROYAL COLLEGE OF SURGEONS OF

ENGLAND

AND

OF THE HUMAN STOMACH

BY JOHN C. THORNTON, M.D.

OF THE

LONDON

PRINTED BY J. JOHNSON, ST. PAUL'S CHURCH-YARD

1825

1825

TO

CHARLES BELL, Esq.

FELLOW OF THE ROYAL SOCIETY OF EDINBURGH,

AND OF THE ROYAL COLLEGES OF SURGEONS OF LONDON

AND EDINBURGH,

TEACHER OF ANATOMY IN GREAT WINDMILL

STREET, LONDON,

&c. &c.

DEAR SIR,

YOUR late elegant work has so fully illustrated the anatomy of the urethra, that without your advice I should scarcely have presumed to employ my pen on a subject so nearly connected with it. Imboldened, however, by that encouragement which you were pleased to give me, I have ventured to offer, in this little essay, the results of my dissections, when employed, under

your own eye, in investigating this important part of anatomy.

The recollection of the advantages I then experienced now urges me to present these pages to you, in hopes that you will estimate them, not according to their intrinsic merits, but rather with a reference to those feelings of obligation with which I remain,

DEAR SIR,

Your much indebted

and very obedient Servant,

JOHN GAIRDNER.

50. Hanover Street,
Edin^r, 1813. }

ON THE

ANATOMY OF THE PARTS

CONCERNED IN

THE LATERAL OPERATION FOR THE STONE.

THE researches of many eminent men have at length brought our knowledge of the structure of the human body so near to a state of perfection, that little remains to be done by the modern anatomist, but to retrace the steps of those who have preceded him, and to make himself familiar with the results of their labours. We therefore find, that our best anatomists, of late years, have chiefly devoted themselves to the task of dissecting and describing the various

parts of the body, with a greater attention to minute particulars, on the one hand, and to precision and perspicuity of language on the other, than the older authors, in the ardour of discovery, were accustomed to bestow.

Accordingly, many anatomical descriptions, possessed of these advantages, have lately appeared, and are deservedly held in high estimation, as they tend greatly to facilitate the labours of future dissectors, by the clear ideas of structure which they are calculated to convey. Impressed with a conviction of their utility, I shall endeavour, in the following pages, to pursue a similar plan in describing some important parts of the human body : and as my descriptions will be drawn from actual dissection alone, I hope they will be found to possess considerable accuracy.

The parts connected with lithotomy are so interesting to the surgeon, that they have called forth the abilities of many distinguished

authors ; and Mr CHARLES BELL's engravings *, which have been lately published, deserve to be remarked as containing the most minute information which has hitherto been presented to the public on this part of anatomy. To these, therefore, I beg leave to refer, for many particulars into which the very nature of my present undertaking will prevent me from entering.

My dissections were first made from the perinaeum, and the bones of the pelvis were afterwards sawed, so as to afford a view of the relative situation of the different viscera contained in that cavity. I shall therefore describe the parts in the order in which they present themselves ; first in the perineal view ; and then, as they are seen in the lateral section of the pelvis.

* Entitled, *Engravings from Specimens of Morbid Parts, preserved in the Author's Collection, &c.*

The subject is to be secured in the same way as is done for lithotomy. Before making an incision, attention should be paid to those prominences which may be felt externally, and which are to direct the first steps of the operation. In these, the knife has to pass between the bulb of the urethra and crus penis. The former may easily be distinguished through the skin, and the situation of the latter is known by that of the ramus pubis, which is also easily felt, and which has the crus attached to its inner surface.

Having paid due attention to these points, an incision is to be made on each side of the perinaeum, along the edges of the ossa pubis and ischii, through the skin, which, with the cellular membrane immediately under it, is to be carefully dissected off. This first dissection brings into view a fascia of no small importance, but which is, nevertheless, rarely attended to, either by authors or students. The attention of medical men was, I believe, first

called to it by Mr ABERNETHY; whose observations on this fascia have not only given us new anatomical information, but rendered that information of the utmost practical importance. The fibres of this membrane seem to run transversely, and it covers the whole space between the back part of the scrotum and the anus, being lost anteriorly in the common cellular membrane of the scrotum, and behind, in that loose texture which surrounds the extremity of the rectum. Towards the sides, it seems to unite with the fascia of the thigh, where it covers the heads of the long adductor and gracilis muscles. The sphincter ani sends some fleshy slips to be connected with it, for the purpose, I suppose, of bracing it more firmly over the parts which it covers. It is of little consequence in lithotomy, though necessarily divided in that operation; but in cases of fistula in perinaeo, its importance is such, that no surgeon ought to be without an accurate knowledge of its situation*.

* Abernethy's Surgical Observations on Fistulae in Perinaeo.

We next remove this fascia, and under it we shall find a good deal of adipose membrane, which in fat persons is of very considerable thickness, and renders the operation of lithotomy in them much more difficult than in others. A staff or catheter is now to be introduced into the bladder, which will much facilitate the rest of the dissection ; and the fat is to be removed with care, so as to expose the muscles and other parts which it conceals.

The perineal muscles consist of three pairs ; the *acceleratores urinæ* or *ejaculatores seminis*, surrounding the bulb of the urethra ; the *erectores penis*, ascending upon the crus penis ; and the *transversi perinæi*, running from the tuberosity of the ischium to the back part of the bulb, to be inserted into each other, and into the posterior part of the *ejaculatores*. These are the muscles most commonly found. I have however found the *transversus perinæi* deficient. Besides those enumerated, two other pairs of muscles have been occasionally, though not constantly seen in this view.

Of these the transversus perinæi profundus is the more frequent. It is placed just under the transversus, having its origin from the bone somewhat deeper, and it is often a very strong muscle. The transversus perinæi alter, is of less common occurrence. It arises along with the transversus; and it runs not across the perinæum, as its name would seem to imply, but obliquely forward to be inserted into its fellow, and into that middle line or raphé which unites the ejaculatores.

If the finger be pressed down between the bulb of the urethra and crus penis, it is resisted by a strong ligamentous membrane. This is the triangular ligament of the ossa pubis. It has also been described as the ligament of the bulb of the urethra. It consists of several layers, the most superficial of which give origin to some of the fibres of the ejaculatores seminis, while those more deeply seated go behind the bulb, and surround the anterior part of the membranous portion of the urethra.

In introducing the sound or catheter into the bladder, this ligament is the chief impediment to the progress of the instrument. If we attempt to depress the handle before the sound has advanced to the point where the canal passes through this expansion, we are apt to push a fold of the urethra against the triangular ligament, and thus the farther progress of the instrument is impeded. Should this happen, we must withdraw the instrument a little, then press it on again, elevate its point by a finger introduced into the rectum, if necessary, and, at the same time, depress the handle, and thus we shall succeed without having recourse to any forcible means *.

The situation of the pudic artery next calls our attention, a vessel which is extremely liable to be cut in the operation of lithotomy, and which, when cut, occasions the most alarming

* See the directions for introducing the catheter, in the explanation of Plate II, of Mr C. Bell's late publication, already alluded to.

hæmorrhage. It lies close to the os ischii, on its inside, about two inches above the tuberosity. From this situation, it runs close to the bone, along the ascending ramus ischii, and descending ramus pubis; and as it advances forward, it becomes more and more superficial. It soon becomes included between the layers of the triangular ligament of the ossa pubis, and in this situation passes, by several branches, into the substance of the penis.

In this course it gives off many considerable branches, some of which are necessarily divided in the operation of lithotomy. The first of these is the external hæmorrhoidal artery, which supplies the parts about the end of the gut by a great number of branches. Next we have the perineal artery, which sends off one branch, the arteria transversa perinæi, nearly in the course of the transverse muscle, and which also gives out a number of vessels that pass directly forward under the perineal fascia described by Mr ABERNETHY, and are distributed to the tunica

vaginalis, and to the skin and cellular texture of the scrotum. The transverse branch is of course always divided in operating for the stone; and from the situation of the branches going to the scrotum, some of these, I think, must also be cut.

The artery of the bulb of the urethra passes off from the pudic just where the latter begins to be involved in the triangular ligament, and it proceeds directly into the substance of the bulb. This vessel, it is said, may be avoided in operating, though I apprehend that it is frequently divided even by the best lithotomists; and indeed I regard its division as a matter of little moment, for neither this artery, nor the branches of the perineal, occasion much hæmorrhage when wounded.

The above are those parts which are brought into view, in dissecting from the perinæum. Having finished this dissection, the pelvis is to be divided vertically, in order to get a lateral

view of the parts at the neck of the bladder and beginning of the urethra. We separate the triangular ligament from its attachment to the ramus pubis of one side, and saw the os pubis of that side, about one inch from the symphysis. We may now either saw the sacrum in the middle, or separate the bones at the sacro-iliac synchondosis. On attempting to separate the bones of the opposite sides from each other, two strong expansions, which will afterwards be particularly described, are put upon the stretch*. I mention them now, because this period of the dissection is the most favourable for viewing their attachments. The bones being divided, are to be completely detached by means of the scalpel, care being taken to avoid injuring the viscera of the pelvis, and particularly the parts connected with the urethra and neck of the bladder.

This view presents many objects worthy of the

* See pages 17 and 19.

surgeon's attention, especially the relative situation of the bladder and rectum with respect to each other, and to the bones in which they are inclosed. Many of these particulars, though of infinite importance in operating, do not easily admit of being expressed in words, and are besides so familiar to the eye of the well-informed surgeon, that it would be quite preposterous, in an essay of this kind, to attempt a description of them. The annexed plate will supply many of these deficiencies, and will serve, at the same time, to explain some things upon which I mean to insist more minutely.

To proceed regularly with the description of the parts connected with the urethra, from that point where we left off in the perineal view, we find, immediately behind the triangular ligament of the ossa pubis, and under the canal of the urethra, the two glands of COWPER, one on each side, adhering pretty firmly to the triangular ligament, and to each other. A little farther back is the compressor urethrae muscle,

for our knowledge of which we are indebted to Mr WILSON of Windmill Street. It is attached above to the os pubis, and, meeting with its fellow, surrounds the urethra.

A fascia falls next to be described, and it is one of some importance, both from its connection with our present subject, and from the office which I conceive it performs in the living body. This fascia has a very firm attachment to the os pubis at the under and back part of the symphysis, and for a little way along the bone on each side. Proceeding from this attachment downward and backward, it is perforated by the urethra, and reflected upon the rectum, the extremity of which it completely incloses, giving it a very strong dense covering. Between this fascia and the gut the fibres of the levator ani muscle are included*. From the

* This expansion, which, were I to give it a name, I should be inclined to call the fascia of the rectum, is shortly mentioned by Haller in these words, "Maximum aliud" (i. e. *farcimen telae cellulosa*) "cum intestino recto in spatia ano circumfusa prodit."

Haller, *Elementa Physiologiae*, vol. vi, lib. xx, § i, p. 375.

situation and attachments of this fascia, I am of opinion, that its use is to prevent the extremity of the rectum from protruding. The pressure to which the bowels are continually subjected from the diaphragm and muscles of the abdomen, renders some such defence necessary wherever the structure of the parts would admit of protrusion; as at the inguinal and crural apertures, and foramen magnum ischii. Each of these places is accordingly strengthened by cellular membrane much condensed; and at the end of the rectum such a defence seems peculiarly requisite, for even the peritoneal covering is here deficient; and were it not for this fascia, and the levatores ani, protrusion at this part would probably be a very frequent occurrence.

From the manner in which the urethra perforates this fascia, I can easily conceive that it may occasionally obstruct the passage of instruments into the bladder, in the same manner as the triangular ligament of the ossa pubis. In

both places the difficulty is to be removed in the same way, force being always avoided, as attended with certain mischief.

A little nearer to the bladder is placed the prostate gland, a part so well known as to render any description of it superfluous. This gland is covered by its compressores muscles *, and contained between two layers of fascia, one of which passes before, the other behind it. Having inclosed the body of the gland as it were in a capsule, the two layers unite, and form a dense fascia, which is fixed to the bones of the pelvis, in such a manner, as to keep it in a state of perfect tension. It is a continuation of the same membrane which invests the internal surface of the levator ani and obturator internus. Its attachment to the os pubis is upon the inner surface of the bone, somewhat higher than that of the fascia last described, and ex-

* The compressores prostatae are attached to the ossa pubis, a little way from the under and back part of the symphysis. Their fibres coalesce with those of a fascia, which envelopes the prostate and its muscles, and which is just about to be described.

tending from the symphysis some way along the upper edge of the foramen magnum ischii. From this attachment it is firmly braced over the two muscles mentioned above, and passes backward to be fixed to the os ischium immediately behind the origin of the obturator internus.

Behind the attachment of this fascia to the os pubis, the ligament or tendon of the bladder is fixed. The sphincter of the bladder is also attached here, and goes down to surround the neck of that viscus.

The anterior surface of the bladder, where the peritoneum is wanting, is covered by a quantity of cellular membrane somewhat condensed. This becomes thicker as it descends towards the neck of the bladder, and has received the name of the *fascia vesicalis* *.

* See Mr Charles Bell's work, page 5 of the introduction. I conceive that Mr Bell considers the fascia vesicalis, and that fascia which I have described as surrounding the prostate, to be one continuous membrane. To me they have appeared distinct parts.

I have thus attempted to give a clear and correct account of the structure of the parts chiefly concerned in the operation of lithotomy. In doing so I have been led to enter into a minute description of some parts, chiefly fasciæ, to which very little attention is in general paid by the anatomist. The knowledge of some of these can hardly fail to be interesting on account of the functions they perform in the living subject. On others it may be thought, perhaps, that I have dwelt too particularly. But I am more anxious to leave no part unnoticed which has any thing to do with my subject, than to avoid the charge of a little over-minuteness. Nothing certainly can tend more to prevent the embarrassment of the operator, than a perfect knowledge of every part which is to be exposed to his knife. In those parts of the body, therefore, which are occasionally subjected to difficult and dangerous operations, an attention to minutiae is peculiarly requisite.

Sensible of the difficulty of making myself completely understood in certain parts of this essay, I some months ago requested of my friend, Mr HERBERT MAYO, to furnish me with a drawing from one of my dissections. I now gladly avail myself of this public opportunity of expressing my obligations to him for his readiness in complying with my request, and for the skill and ability he has displayed in the performance. This illustration will greatly assist the conception of the reader, and prevent that obscurity, which, in anatomical subjects, is in some degree inseparable from a mere verbal description.

FINIS.

EXPLANATION OF THE PLATE.

From a wish to represent all the parts as distinctly as possible, some of them may appear a little more defined than what is natural; but so far as I can judge, the delineation is faithful, and without any exaggeration.

A, is the cut edge of the os pubis of the left side, the section being made a little to one side of the symphysis, in the manner mentioned in the essay.

B, the bulb of the urethra.

C, condensed cellular substance, lying on the surface of the bladder, and forming what has been termed the fascia vesicalis.

D, the vesicula seminalis of the left side, which lies external to the fascia vesicalis.

E, the anterior edge of the bladder in outline.

F, the triangular ligament of the ossa pubis, or ligament of the bulb of the urethra. The edge which extends from the hook to the os pubis, was attached to the ramus pubis of the left side, before the section was made.

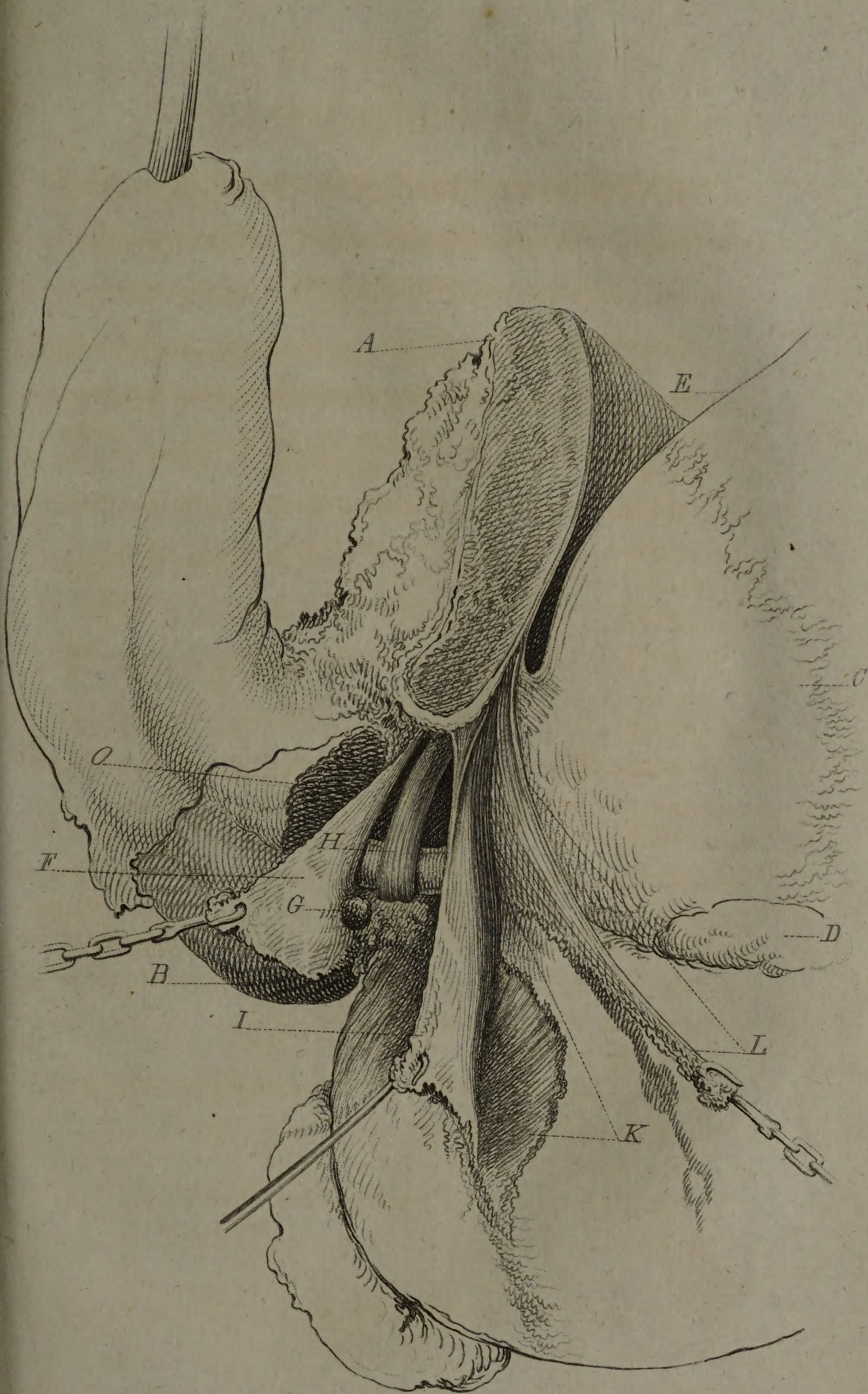
G, one of the glands of Cowper.

H, the compressor urethræ of the left side.

I, the fascia which invests the extremity of the rectum, described at page 17.

K, the fibres of the levator ani muscle, which were attached to the left os pubis, passing under the fascia of the rectum.

L, the fascia which surrounds the prostate gland, and which afterwards covers the inside of the levator ani, and obturator internus.



EXPLANATION OF THE PLATE

